

DRAGON



USER

The independent Dragon magazine

September 1988

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Editorial

The leading news this month is that another Dragon show will be held this autumn, in Weston-super-Mare. The Cellour Computer Convention will be organised by Dragonette Services held on a Sunday so that users who normally work on a Saturday will have a chance to attend. See Newsdesk for further details. However, Dragon User has now heard from two inside sources that the running of an all-Dragon show to be organised by New Era Publications was founded on hope rather than agreement and will not come to pass.

After the interest shown in the Dragon's past in recent letters pages, I would like to hear from anyone who has historical material about the Dragon, or a good collection of old DUs or just a good memory.

Meanwhile, thanks to the Arcade Arena revolution, the column has dropped out this month for reasons of space, but should be back in the next issue.

Telephone number

(04) 575 6308

Editor

HELEN ARMSTRONG

Production Editor

HELEN ARMSTRONG/ARTSET

Administration/Advertising

BOB HARRIS

Publisher

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How to submit articles

The quality of the material we can publish in Dragon User each month will, to a very great extent, depend on the quality of the discs/articles that you can make with your Dragon. The Dragon computer was launched on to the market with a powerful version of Basic, but with very poor documentation.

Articles which are submitted to Dragon User for publication should not be more than 5000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Programs should, whenever possible, be computer printed on plain white paper and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please keep a copy if you wish. A layout program returned if you must include a stamped addressed envelope.

Pamcalls

THANK you for addressing me of the amazing need that Dragon User is to continue under new management. My own news is similar but different.

Needing to make a contribution to the family budget, Pamcoems Ltd. for was formed well before the Dragon came on this scene. Although I have been involved with the Dragon (my first and still best-loved home computer) since 1982, primarily because I got there via the imagination for creating computer games the Dragon has remained a private computer interest, though also the one that has given me the greatest enjoyment. Earnings over the last three years have been sustained by contracts to convert games to a French title for a software house. Alas, that market seems to be closing down, so I must seek new pastures. Although Pamcoems has been my best employer (and I am talking of 100 roles, not multiple hundreds!), it is obvious that the Dragon will not be a viable financial proposition for me. A software publisher, having seen Pamcoems Ltd at the London show, gave me a 16-bit machine to develop software on. To date, I have been allowing myself to be drawn back to my much loved and familiar Dragon rather than concentrating on the new beast. However, your letter suggesting that the way was now open to continue Pamcoems forces me to face reality and say sorry, but I must put my future energies fully into 16-bit technology. I am sad that I couldn't complete the machine code some more thoroughly, and that I haven't developed for the Dragon all the software that I would like to, and that I haven't been to an Osean Show.

As for the future of the Dragon, it remains a very good computer; there are now software developers replacing the drop-outs; Dragon User will continue and flourish if owners realise that if they put their hands in their pockets every now and then, Dragon life is sustainable — and I don't know that I will be able to totally divorce myself from it ... Sincerely, I will sign off by

Every month we will be shelling out a game or two, courtesy of our suppliers, to the readers who send the most interesting or entertaining letters. So send us your hints and your opinions, send us your hi-scores and suggestions. Send us your best Dragon stories. What if you think we are, mind readers?!



Easy is best

"AND some have greatness thrust upon them."

I was surprised to find my name in print in Gordon Lee's column in July. I am neither right sex, shape or age for Page 3, and as a convinced republican would refuse to have my name in the Court Circular, so that only leaves Dragon Users as a remaining target!

However, I am not writing to green my expanded ego, but to confirm Gordon's wise advice about a useful textbook. By a strange coincidence I purchased *Easy Programming* book he recommends at about the same time as his column, and can certainly confirm that it is a most helpful and well-written book. I now agree with his emphasis on knowing thoroughly the action of each command. I

was tempted to skip the first 'baby' chapters, but, having decided to work through them, found that even the simple exercises had been carefully thought out to teach a lesson and that much of my previous difficulties were because I had only partly understood certain functions.

However, Gordon Lee's line of endorsement from me, and my main reason for writing is to let readers know that the book is available from R & AJ Preston, Kings Hall Court, St. Giles Major, Mid. Glam CF23 2SE. I think the second book is, too, but do not have their list at present to confirm. However, they will no doubt be glad to let anyone interested have a copy of their attractive title catalogue of games and books.

Jim Finlay, Romford

I haven't got all the details of time-writing, but Preston's are glad to receive enquiries. There should be an advertisement in this issue with details of their new games. The very same advertisement missed last month's issue because of a postal dispute in some North London sorting offices, so

they deserve an extra plug. I'm short of ready-to-publish letters this month owing to the aforementioned moves, holidays and other stuff. I have a large packet still to sort, so hopefully we will be back to normal next month.

Thanking my customers for their support, I feel even greater thanks are due to all Dragon user readers who have troubled to write to me about everything and anything over the years, finally special thanks to Dragon User itself. Had computer programming not been such a lucrative career, I would have switched to journalism in my youth — thank you for allowing me to have my cake and eat it. Long live the Dragon!

Tom Davy
21 Wycombe Lane
Woburn Green, High
Wycombe, Bucks HP12 0ND

AND thank you for everything, Pam. I hope business continues to flourish.

But, said I to an engineer of my acquaintance, recalling what Paul Grade said in last month's User, is it true that people will buy a new computer just because the colour is better and the memory is bigger, whether they need it or not? (I am not quite as naive as I sound, but, not being of this school of thought myself, I wanted a second opinion.) Oh yes, said he. There are good reasons as well, of course, but the more you think out, the

more you find that people don't buy quality, they buy appearances.

How we have an expert and dedicated software writer being dragged kicking out of the Dragon arena by financial pressures as a direct result of all those people who bought 16-bit computers because they couldn't work out what to do with their 8-bit ones. Being someone's position to observe a large body of unusually devoted 16-bit users fairly closely, I can report that, despite the best intentions, many of them still don't know which way up to hold the thing, Heaven knows how the off-the-pag-57 crowd copes.

Maths on the run

AN answer (perhaps only partial to Phil Daniels's query) posted on the run? July 1988 reference putting in mathematical functions a running program may tie in the key part to a program for drawing graphs which I submitted to DU some years ago but alas! it was rejected. The relevant part of the larger program is appended.

The function is entered as a string (F0) which is analysed for trig functions, operators etc., which are then tokenised and joined (inserted by the token for DEF F0(F0)) into a 'reserved' program line (R00), the whole line, or its remainder after tokenising the function, being made operable by inclusion of the token for RESM. The position of the reserved line is variable (N). A sub-routine (R00) returns the whole reserved line to a PRM statement if included, otherwise every time a new function is entered, the program would have to be reloaded. Note that the 'reserved' line must be at least 16 characters longer than any function which is to be entered to allow for DEF etc.

PG Hollman
6 Kings Cross
Liphinstrey
East Lothian
Scotland EH12 0DF

PG The '500' mentioned in line 430 is the line in the main program when the entered function is used.

6809 Show goes to Weston-S-M

Dragonfire Services are to organise a show for the Dragon and Tandy Colour computers at Weston-super-Mare, Avon, on December 4th 1988.

Jane Parris of John Parris/Discount Software is quoted as saying that it is unlikely that the Parris could organise a London show this autumn, owing to the very high cost of London venues. Weston-super-Mare, near Bristol, has excellent road and rail access to most of the UK and is fairly local to the organisers.

All the major Dragon and Tandy suppliers will be there with software, hardware and supplies. There will be special show reductions, and new software will be released at the show. There will be 'bargains' say Dragonfire. Companies, John Parris Discount Software, Orange Software, Printer Software, R & A Preston, NIGAD and Dragon Magazine have already put down their names to attend.

New Era moves into software

NEW Era Publications, publishers of 5809 User (formerly Dragon's Finer) are launching a new software label, New Era Software, in order to endorse their commitment to all areas of Dragon publishing.

The Colour Computer Convention will be held at the Avonville Hotel, Lower Church St., Weston-super-Mare from 10am to 3pm on Sunday 4th December, entrance £1.50 (JA Pflunder 10% 794; unauthorised letter free).

Dragonfire also write: "Please print our address in the supplier column in reviews, so we can order as a result of the Complete-level and Script review, but none from the Pyrotechnics and Griefsteering reviews." In future, all reviews will contain the supplier's address, but for the above games and information about the show, contact Dragonfire Services, 10 Perry James Close, Stains, Great WY3 3DA.

Anyone who finds that Complete-level does not function fully with their version of Printer Control should contact Dragonfire.

New Era is presently looking for software writers, offering a royalty rate of over 50%. Contact New Era at 37 Collins Meadow, Harlow, Essex CM9 4BN.

Ink and Ink again

From John Smallwood

A fine called Masdin will re-ink used printer and typewriter ribbons. The fast re-inking costs £1, and the company will enclose an estimate with the re-inked ribbon for how much it will cost to re-ink the ribbon in the future.

There is a helpful after-sales service seeking out obsolete or ob-

solete ribbons (see Letters, July 1988). Write to Masdin (Dept. 66), 4, Market Crescent, Symonpath, Berrystowne TD14 5AP. Tel. 0867 50966.

Dragon User would welcome a consumer report from anyone who has used this service.

Extension keyboards from German source?

From David Rothery

A source has been sighted in Germany which apparently supplies a replacement keyboard and interface, featuring 64 keys including 10 function keys, and a integral real-time clock on the circuit board.

The add-on board must be entered inside the Dragon. The clock carries the date and time permanently and can be accessed under DragonDOS by inclusive in-accounting programs, etc.

The clock/real useful function is with CG-8, where it datestamps each file it saves and will automatically date letters written using Sfile and Mailmerge.

A new GLOCK unit is sup-

plied for the cassette, so that when a CG-8/MSK system call is made, the new clock is used. The keyboard drivers are supplied, along with some Dragon-DOS software.

The package costs £20 plus £2.50 p&p the real-time clock by itself costs £20 plus £2.50 p&p.

Dragon User has contacted the address supplied, Georgbrach Softwareentwickler, c/o Alexander Giescheit, Grafstrasse 7 D-8573, Gabelsdorf 1, Federal Republic of Germany, for confirmation and literature, but has had no reply at time of going to press. There is said to be a limited number of keyboards and that 'bidding can be arranged' before further details are given.

Maplin Electronics still in the Dragon business

THREE hardware construction projects for the Dragon are available from Maplin Electronics: the Dragon 32 Extension (job only £2.80), the Dragon 32 160000 Modem Interface (job only £3.95, kit £10.95) and the Dragon 32/4 Part (job £3.50, kit £7.95). Constructional details can be found in Maplin Project Book 10 (the Extension) and Maplin Project Book

8 (the other two). The project books are 85p each.

These details are taken from the current Maplin catalogue, page 295. Maplin can be contacted at PO Box 3, Rayleigh, Essex S20 6LR, Tel. Southend-on-Sea (0705) 850771 (mail order) and has shop (non-mail order) in Manchester, Birmingham, Bristol, Westcott-on-Sea, Southampton and London.

Prolog for OS-9

The new product from Clark-Jolly's firm, Microsoft, is a Prolog compiler for OS-9. The compiler converts Prolog 2 source code into 8085 assembler source, which can be assembled into an executable program using the standard OS-9 assembler.

The package is supplied on a disc containing the compiler, runtime module, documentation and examples.

The compiler has all the standard Prolog features such as

non-deterministic execution, pattern matching, backtracking, program control using call and fail, recursion and metaprogramming. The runtime module includes a large subset of the standard Prolog 2 predefined rules, including integer arithmetic, string handling, list processing and file IO.

The packages are available now and cost £12.50 from Microsoft, 4 Pinehurst Walk, Drington, Kent BN9 8DD.

The short and the long of it

Program: VisiText-Plus, Electronic Author SuperPrinter, Orange Software, The Gantt, Don Reed, Axiom/Comp, Alphanumeric, Grand RHY 90P
Price: £15.95, £19.95

Electronic Author has been around for some time now and as far as word-processors are concerned it has had things pretty much its own way. When I found out that Orange software were bringing out a new wordprocessor called VisiText-Plus, I was quite keen to do a comparison. I was even more keen when I found out that Orange were about the put out Electronic Author V2.5. What follows is, I hope, a well balanced comparison.

VisiText-Plus

Don Stottor's original idea was to write a program that would allow him to write letters on his Dragon. However, like many a good idea it grew and grew. The end result is a WYSIWYG (nearly) word processor that uses a 64-column screen and can handle 308 lines, about three pages of text, at a time.

VisiText is certainly one of the easiest systems to learn that I have ever seen. All that is necessary is to load the disc and type /BOOT and away you go. The program is predominantly menu-driven and, rather surprisingly, is a mixture of Basic and machine code. In the past Basic word-processors have been criticised for being painfully slow. This is where the machine code routines come in. Where speed is necessary, machine code is used; elsewhere, Basic rules. This makes the system easy to modify or debug where necessary, in order to conserve space. Don has produced a modular program which keeps its routines on disc and only loads them when they are required, leaving useful space for text even on the OS2. The 64-column screen is a real gem. Those of us who use monochrome monitors or televisions will appreciate the flicker free, black on white display. By using an overhead font for the screen Don has produced probably the most readable 64-column screen that is to be seen on the Dragon. The characters do not merge, and apart from a slight confusion with capitals S and W, it was no problem to read.

For the uninitiated I should explain that WYSIWYG is an acronym meaning 'What You See is What You Get'. This is what makes VisiText easy to use. It is possible to load the system, write a letter and print it correctly, without learning a single control code. If it is right on the screen, it will be right on paper. Where the system falls in where almost all other systems go wrong, namely on non-standard characters like bold or enlarged. These only appear as

standard characters, sandwiched between teletype/teletographic characters which indicate control codes. Now, I will never be able to look at a vertical ellipsis and know that it means bold type, or that sideways "a" means that bold has been cancelled. Still, as I said before, this failing is shared by many other so-called WYSIWYG systems. However, a more serious problem is that so master what happens you see, you are still stuck with 64 characters per line, nothing more, nothing less.

Regularly used lines and phrases can be stored as quick texts, which can be called up using only two keys. These can be up to 64 characters long and may contain control codes, such as new line or enlarged font. They can be held as temporary files or stored on disc. In this way it is possible to create and store an address book, which can be called up whenever it is needed. Pressing the BREAK key forces a return to the main menu, while the CLEAR key acts as a control key which when followed by any other key will enter either a printer control code or a 'quick text'. Although auto-repeat, or auto-fill, is used the speed can be adjusted or the feature switched off using the on-figure option. Unfortunately, holding down the SHIFT key forces a repeat of the character types, and the SHIFT is bypassed. For this reason it is best to use the shift lock (SHIFT + O) to bypass a short word in capitals. The program comes really well up for an Epson FX100, or compatible, printer. However, it can be reconfigured to suit whatever machine you used. Any program claiming to be WYSIWYG would have to take word wrap and block as no exceptions: words are never split over two lines, and unnecessary leading spaces are ignored.

Bug call

Text can be stored on, or loaded from, disc and printed in whole or in part. My review copy had a bug in the SAVE/LOAD routines which resulted in an error message and failure of the routine if the directory was accessed before saving a screen. A quick call to Orange Software soon effected a cure. Similar problems occurred when using the save routine for the 'quick texts'. Although I managed to cure the problem, the curious fact is that I could not see anything wrong with the original routine. Perhaps it just did not agree with my SuperDOS.

A Move Text routine is included for either a block of text or a screen window. However, the procedure necessary to achieve this is somewhat cumbersome, and if the original is deleted the existing text is moved up to fill the gap. The result is a hole in the text that has to be removed

manually. The find and change string procedure is slightly easier to use, but subject to the same limitations. The replacement string must be the same length or shorter than the string to be replaced. If it is shorter, then gaps are left. Both these routines are of questionable usefulness, and I must admit that I feel that their inclusion is little more than window dressing. No word count or page numbering is available, and it would have been nice to have the paper wound out of the printer once the run was finished.

Documentation was quite good and well presented in its bright orange folders. However, it did tend to be a bit vague in places, especially the parts dealing with the Move Text routine and also the saving of 'quick texts'.

The ease of use offsets these minor criticisms to a fair degree, and with a price tag of only £15.95 it seems great value. The bugs are a different matter. Graham Smith assures me that all new copies will be bug free, and in the meantime anyone who experiences problems of a similar nature should contact Orange Software.

Electronic Author

Being an all-machine code program Electronic Author occupied only 6K with another 6K allocated to the high resolution screen. There is still space for over 176 of text, even when running on a Dragon 32. It is supplied with a program called Comp, which is used to set up the program to whatever printer you care to use. This will set up all the commonly used codes, the no-so-common ones being catered for in a different way.

My first impression of this system was somewhat mixed. Being both impatient and lazy, I expected to just RUN 'AUTHOR.BIN', but it did not work like that. Even a Basic loader program corrupted the program. I ended having to stick to the instructions and LOAD, then EXEC the program. In fact, this is the only difficulty I could not beat between my original Smithtron Computing copy and the V2.0 version supplied by Orange Software. The V2.0 version loads and runs via the BOOT command. This main display is on the high resolution screen and prints black on green, either 61 or 64 columns wide, with a command window at the bottom of the screen. This screen display is beginning to look pretty dated now, with many people, like myself, using monochrome monitors or black and white televisions, and it would have been better to use a block on white screen which gives a much clearer display. To achieve the 64-column screen, Wayne Smithron just removed the space between the letters. This means that you have to teach your eyes to read a new type of 'join-

Dragonsoft

Now software for review should be sent to Dragon User,
48 Alexandra Road, Houston, Middle TN 37149

ed up writing. Because it has so many capabilities, it is necessary to read the manual supplied pretty thoroughly before starting to use the system.

Not being WYSIWYG the screen width sets no limitation on the printed width. For instance, if it is put into condensed mode the printer will print 133 columns wide and the system will handle it. What is more, if, say, a word of enlarged text is included, the program will adjust the line accordingly. Printer codes are given as inserts prefixed by the control character. Unless otherwise defined, this is normally a hash sign, so # 10 (that has come out as a # sign on your printer, Ken D.)

sets double width. Such a format makes it easier to trap faults when it doesn't print correctly. A fill and justify command is available which gives nice even margins on a literal mode which allows tabulations to be achieved.

Text can be copied or deleted. Both routines either create space for the new text or close up the space if text is deleted.

No separate MOVE routine is included because if text is copied to a new location and then the original deleted, then the original has effectively been moved. A separate routine to do the job would just be a waste of space. Both page numbering and word count are supported by the program. SAVE and LOAD routines are included and, in general, work very well. There is even a facility to tag another file from close onto the end of the text currently in memory, which can then be edited or moved around to form an integral part of the original article. One slight disappointment is that the DEL command does not work with SuperDOS, though a two byte patch will cure this. Also, there is no capability to RLL a text file without leaving the program.

Conclusion

Well, the key question is, which program should you buy? The answer (as so often)

depends on what you want to do with it. Mtext lacks the versatility and control ability of Electronic Author (Electronic Author, on the other hand, lacks the ease of use and the outstanding screen display of Mtext). In writing this review, I used each system and discovered that their test files are compatible, so will probably use both. The best advice I can give is that if you want a word processor mainly to write letters and shorter texts, then Mtext is for you. If you intend to go into competition with Leo Tebbly, or write your thesis, then Electronic Author is a better bet.

Both programs are obtainable in DragonDOS format from Omega Software for £1999 (Electronic Author) and £1599 (Mtext Plus).

Ran G. Smith

Electronic Author



Walter Plus



plus



for value for money

Old favourite tours the world in triumph

Program: Champions
Supplier: Computape, 27 North End, Southminster, Essex CM8 7ND; Harry Whitehouse, 40 Queen St., Bambern, Newark, Notts NG24 3JG.
Price: £795

VERY few Dragon games can claim the success attributed to similar games on other computers. Indeed, few Dragon games can claim to be the inspiration behind converting the idea to other computers. Yet both of those prestigious qualities form the basis of one innumerable Dragon game, Harry Whitehouse's Champions.

Champions, launched in 1983, rapidly captured the imagination of many Dragon users, the result being that it secured a place in the Dragon hall of fame as one of the most popular all-time Dragon games. And yet, while its popularity has never been in question, an review has never found its way into the pages of Dragon User.

To those not yet familiar, the game involves playing one in the intriguing position of a fourth division football manager whose aim is simply to become the next Brian Clough, taking the pre-selected team to the dizzy heights of the first division, and subsequently into the realms of European football.

There are indeed many realistic features incorporated within the game, many of which were added in 1985 in a successful attempt to lift off the morose cooperation which Addictive's famous Football Manager imposed. Such features include a transfer market, a revamped Bank

Manager (perhaps reminding us that football has as many bottles of the pitch as on it), a competitive and enthralling P & C, with limited graphics, enabling you to view the game in progress, while still graciously boasting the often fatal 'weekly salary' feature which simulates the weekly events. Indeed, it is hard to envisage an aspect of football which the game doesn't portray.

If you ever find one of your Brand X-owning friends playing The Boss, or Soccer Boss, point out that it is a conversion of a Dragon game!

Harry Whitehouse, perhaps best still remembered in his former guise as Peaksoft, is quick to emphasise the game's success, not only in the Dragon market but more usefully in other formats as well. "The point about Champ is that it is still one of the most successful games, although few people recognise it" says Harry. "Champs did so well on the Dragon that we thought 'This can't be bad', so we re-wrote it for the DRI, then the BBC/Declar, Lady CoCo, Oric and Spectrum. Oh I covered again. During this time, we'd been thinking of new features, so we did a pretty thorough re-write before we brought it out for the Commodore 64, retaining it

The Boss. That zipped off into the top ten list, so we incorporated all the improvements into the Spectrum and BBC/Declar versions, together with a new version for the Oric Atmos, Commodore 16, MSX and Amstrad CPC."

"We still sell quite a few copies by mail order through the football magazines, but the most interesting current point is that we've licensed The Boss as a budget product to Alternative Software, who have re-written as Soccer Boss for several computers. In its new clothes, it has been in the national Top Twenty for a number of months (best position so far, number two, but we're keeping our fingers crossed)."

"The point about all this is that if you ever find one of your Commodore 64-owning friends playing The Boss or Soccer Boss, point out to him that he is actually playing a conversion of a Dragon game. And if he happens to have another top twenty game called Inspiration/Orbit in his collection — well, guess how that began too!"

Self-evidently, Champions has become somewhat of a cult among Dragon users, and indeed in the computer industry in general. If the game has yet to find its way into your collection, whether you are interested in football or not, then you can be sure you will not find many more addictive and entertaining games than Harry Whitehouse's Champions.

Simon Jones



DRAGONSWORD!

Paul Grade takes a monthly stab at setting the world to rights

JUST for a change I think I ought to try writing about a subject I know really well, but that I don't know all about everything, of course, only our Beloved Editor could know more (and that will cost you a drink, water), but I have to admit to knowing a little less about some things than others. (Such genres, and so modest too.) Anyway, the topic for today is going to be the turning of user groups and/or magazines, and there's a very good reason for this choice...

I'm getting tired of seeing groups and magazines start up, build enthusiasm and goodwill, only to disappear without trace a few months (or sometimes weeks) later.

There's a lot of different reasons why the enthusiasm turns into disillusion, but what it usually comes down to is that people don't get carried away with the grand concept, and don't give enough thought to the realities.

The Dragon could do with a lot more 'ambassador' support. That's about the only credit it can get now, because the user base is simply too small for anyone to operate on a commercial basis, and anyone thinking they can make a profit out of the Dragon scene now probably believes in Santa Claus and election promises too.

No profit

There's a lot of scope for anyone wanting to help out the Dragon scene, software writing, small inexpensive hardware projects, and, and of course running magazines and groups. None of these is going to make any profit, but there's no reason for there to make a loss, either, though they all need a lot of work. If you aren't prepared to work, do everyone a favour and don't even try!

Running a group is probably the most difficult of the lot (and I'm not just saying that because I run one). The first thing you need to decide is how big you want it to be, whether it should be 'local' or 'national'. Unfortunately this is where the mistakes usually begin! There's a temptation to think TOO big and get ideas about setting up a national group or mag when resources aren't good enough. To run a group of around a thousand users you need more than just enthusiasm. For a start, you need to work out where the members are going to come from, how you're going to let them know you exist, and from the point, what you're going to offer that will make joining your group the one offer they can't refuse.

Think you can do it by advertising? Dragon User and Update would probably be happy to give you a mention, and you could even buy advertising space, but you'd be lucky if that got you more than half a dozen replies, and half the cost of those would never be heard of again after the initial enquiry. Believe it or not there's a NCF crowd of Dragon owners out there heading their breath and writing for the chance to

join your group, just some very cautious and cynical ones who have lost money before by subscribing to groups and mags which have stopped dead the day after they sent their cheque. The only way you can hope to get an enthusiastic mail and hope that you can build up a good enough reputation for people to want to subscribe.

Start small

There's a couple of other reasons for starting small... time and money! Flurring the MDUG takes me around sixty hours a week, minimum, which means goodbye to evenings out and weekends off for a start, and then you need to be able to cover a £240-per-year phone bill, the class of photocopier that you don't usually find under £2,500 even second hand, and a paper and postage bill that has to be seen to be believed. If you have allies to spare, then please start a national group, and I promise to be one of your first members, but if you don't then please don't try to take on more than you can handle, it simply doesn't work. Exactly the same points apply to magazines. There isn't quite as much work involved, but other costs are all very similar, and there's still the same problems involved.

Start small, and try to build up a reputation which will force you to expand, it isn't easy. You will find that all the people who told you what a good idea it was and that they would be willing to help with the work will disappear like magic as soon as you try to pin them down to actually doing something at the time it needs doing, that the promised material, articles, etc. will never materialise, and that while everyone is all too willing to tell you what you should be doing, none of them ever want to assist in doing it! For what it is worth... the problem does improve with time, but of course you have to survive long enough to appreciate that!

Masochist

So why should you even attempt to start a group or a magazine? Well, possibly to gratify your repressed masochistic impulses, or perhaps because of your kind, generous and altruistic nature, or even because you want to keep interest in the Dragon alive, and possibly learn more about the old beast in the process.

So far as I'm concerned, running MDUG has taught me a lot I don't know about the Dragon, got me some very useful contacts, it has a few very good friends, and even the odd enemy or two. It has written off any kind of social life, and even with the help of some very good editors has given me far more work than I every imagined it could. As an occupation it can be interesting, depressing, infuriating, and a right pain in the anatomy. It has been educational too,

you'll be surprised at the adjectives I've invented!

Don't get the wrong idea, I'm most certainly not trying to put you off. What I AM trying to do is make sure you know what you're taking on, so that you're a better than even chance of survival.

The point is that when you start something like a group or a magazine you're asking people to accept you on trust. You're asking them to pay you money, send you material, for something YOU have promised to run. YOU aren't just taking the money, and then decide that it's all too much bother, too much work, and ditch the thing. That doesn't just leave a bunch of rate punters looking for you with their favourite piece of lead piping, or the local police wanting you to assist them with the odd enquiry, those anxious points, and of interest only to yourself and your local casualty department. The real damage is done to the entire Dragon scene, people decide that enough is enough and they aren't going to risk the advertising happening again, so the genuine groups and magazines suffer real real software distributors (the only bad lot) suffer, because YOU will have made people even more reluctant to risk their money. Get the picture?

Fun

Running a group or a magazine can be a lot of fun, and can help a lot of people, but please think the thing through properly before you start. We need more groups, especially local ones, the type which cover a town or county, because these are the ones which can do most for the Dragon scene... a really good network of local groups would be much better than one national one, even MDUG! and local Dragon magazines can carry much more of direct interest to their immediate readers than national ones, which has to take a more general view of things and of course messes out on a lot of local news, and of course, if you make a really good job of things, eventually you'll get subscribers from outside the immediate area, and then you're ready to go national and leave the local scene for someone else to cover.

You, I KNOW don't do it that way, but that was four years ago, and the scene was much bigger then, and I had the advantage of being used to running a business, and could run a Group on the same lines. Times have changed now, the scene is smaller, and people are more reluctant to chance their money.

Anyway, let me know when you're off your group (you started and I'll give it a write-up), and that goes for your magazine as well, but please remember that I don't like writing about that!

Paul

MacGowan Consultants

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Due to re-organisation and holidays there will be no service at the usual address and phone No. from 15th Aug. to 1st Oct. 1988.

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-
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REAL VALUE FOR MONEY SOFTWARE

Access and Search

D. Hill gets into his programs and out with the numbers

HAVING recently spent many hours writing along Basic programs involving random access to disc files, I decided to change the name of one of the data files on the disc. I now had the time-consuming task of searching through the entire program for all references to the old file name in order to change it to the new one.

The thought of all that searching prompted me to write a program to do it for me. My first thought was a short basic program but this creates the problem of loading too basic program into memory which, although not a great problem was, nevertheless, a nuisance as well as taking up valuable memory.

What I wanted was a machine-code program which would search a Basic program in memory for any string of characters entered and report the numbers of all lines containing that string. This program is the result.

The program is written in relocatable code, but is best loaded in 32K00 after having reserved space for it. Typing

```
PCLEAR;CLEAR;C32K00
```

will leave the maximum amount of free memory to load the Basic program to be

searched. A hex dump with checksum is included which can be loaded with Pam O'Leary's hexloader (Dragon User, June 1985).

The program first checks that there is, in fact, a Basic program in memory, sets Flag B (output to printer?) to 0, then asks for the string to be searched for.

Tokens

As I am sure most readers are aware, all Basic command words are stored as tokens, therefore, the next stage is to expand the line from its stored token order to search it. If the string is found, you are asked whether the results are to go to a printer. If the answer is yes then Flag B is set to 1. The number of the line containing the string is then displayed, the sub routine 'Dense' checks Flag B and copies the results to the printer, if it's set.

The maximum length of the string is set at 255 and an error trap is included to ensure that this is not exceeded. The sub routine 'DOPULL' ensures that the results do not scroll off the screen until a key is pressed.

I'm sure that the more 'expert' programmers among you could improve upon my efforts but, nevertheless, I thought it could

be of interest to others, if only as an example of what can be achieved by someone with no knowledge of computing other than that learned from the invaluable articles published in Dragon User and a copy of Inside the Dragon.

When first written, every time the program entered and returned to the basic command mode an 'SN Error' was flagged. Apparently the computer was looking at the area of deconstructed text and deciding that it was invalid word. The "clear input buffer routine" is my solution to that problem. I'm not exactly sure how it works, but it does.

Help!

There are several articles in Dragon User and inside the Dragon explaining how a Basic program is stored in memory but I couldn't find anything to explain exactly what happens when you type in something indirect mode and press enter. Maybe one of you knowledgeable people could enlighten me by writing an article on which locations are used etc.

Finally my sincere thanks to the many people who submit informative articles and to Dragon User for publishing them.

```
31000 BB, BA, 77, 6F, BB, 02, AE, EC, 9F, 00, CHKSUM= 1317
31010 19, 10, B3, 00, 00, 26, 07, 30, BD, 01, CHKSUM= 407
31020 F1, BB, 6B, 3F, BB, BA, 77, 30, BD, 01, CHKSUM= 1230
31030 74, BB, 61, BB, 0C, BD, 3E, BD, BA, 77, CHKSUM= 1300
31040 17, 00, A2, 6B, BB, 02, B4, 26, 00, 6F, CHKSUM= 731
31050 BB, 02, B0, 30, BD, 01, EA, BD, 47, 17, CHKSUM= 930
31060 01, BB, BA, 0B, BB, B0, 0C, 6F, BD, 02, CHKSUM= 758
31070 6E, 20, B0, 02, 24, BD, 35, BD, A0, BA, CHKSUM= 1130
31080 B1, 2F, 27, C4, 0E, 02, DB, 9F, A6, 7F, CHKSUM= 1270
31090 02, DB, 7F, 02, DE, 7F, 02, DF, 3F, BD, CHKSUM= 1172
31100 BA, 77, 30, BB, 01, E5, BB, 14, BD, A0, CHKSUM= 1236
31110 BA, 01, 53, 27, 0A, B1, 50, 26, EC, 6C, CHKSUM= 1086
31120 BB, 02, 3A, 20, 04, 6F, BB, 02, 24, 3F, CHKSUM= 600
31130 A6, B0, 24, 01, 3F, BB, B0, 0C, 17, 00, CHKSUM= 742
31140 B3, 20, F3, 6F, 30, BB, 02, 0B, 24, 10, CHKSUM= 867
31150 BB, A0, BA, 3B, 10, B1, 0B, 27, 1A, BD, CHKSUM= 1048
31160 B0, 0C, B1, 0B, 26, 07, 30, 1F, BA, 2B, CHKSUM= 534
31170 B4, 20, E7, A7, B0, 5C, C1, 14, 2B, E0, CHKSUM= 1350
31180 BB, 04, 17, FF, BF, E7, BB, 01, F7, 3F, CHKSUM= 119F
31190 BB, 0B, BB, B0, 0C, 30, BD, 01, 21, BD, CHKSUM= 840
31200 BF, BB, A0, BA, 3F, 6F, BB, 01, E2, 9E, CHKSUM= 1462
31210 19, 10, AE, B4, 10, B0, 00, 00, 27, 7C, CHKSUM= 666
31220 B4, 20, EE, 02, 34, A0, BB, BF, 0B, 35, CHKSUM= 833
31230 A0, BE, 02, DB, 31, BD, 01, B1, E6, BD, CHKSUM= 3160
31240 01, C2, A6, B0, 4B, 26, 02, 20, BA, A1, CHKSUM= 989
31250 A4, 27, 02, 20, EB, BA, 27, 04, 21, 21, CHKSUM= 687
31260 30, EC, 6B, BB, 01, A9, 24, 15, BA, 0D, CHKSUM= 994
31270 BB, A0, 30, BB, 00, AA, 17, FF, 6D, BD, CHKSUM= 3122
31280 40, BA, 0B, BB, B0, 0C, 17, 00, BF, DC, CHKSUM= 962
```

31270	88, 80, 83, 05, 9F, 25, 02, 8D, 8F, 1F,	CHKSUM= 737
31300	30, 34, 04, 88, 93, 7A, 6E, 88, 01, 7F,	CHKSUM= 944
31310	27, 08, 0A, 6F, 0A, 6F, 35, 04, 8D, 95,	CHKSUM= 691
31320	7A, 0F, 4F, 20, 02, 20, 04, 84, 20, 8D,	CHKSUM= 708
31330	80, 0C, 17, 00, 21, 6C, 8D, 01, 60, 35,	CHKSUM= 575
31340	10, 14, FF, 78, 39, 31, 88, 01, 42, E4,	CHKSUM= 760
31350	88, 01, 53, 01, 00, 24, 01, 3F, 5A, A4,	CHKSUM= 770
31360	40, 88, 80, 0C, 8D, 02, 20, F1, 6D, 8D,	CHKSUM= 1155
31370	01, 43, 3F, 03, 8D, 80, 0F, 3F, 34, 14,	CHKSUM= 577
31380	30, 6C, 79, 64, 8D, 01, 32, 17, FE, FC,	CHKSUM= 1134
31390	6C, 88, 01, 28, 8D, A0, 6A, 8D, 8A, 77,	CHKSUM= 1370
31400	35, 14, 3F, 45, 48, 54, 45, 52, 20, 52,	CHKSUM= 429
31410	45, 41, 52, 43, 48, 20, 53, 54, 52, 49,	CHKSUM= 709
31420	4E, 47, 20, 41, 4E, 44, 20, 50, 52,	CHKSUM= 418
31430	45, 53, 53, 20, 20, 20, 45, 4E, 54, 45,	CHKSUM= 431
31440	52, 20, 20, 20, 20, 00, 54, 49, 45, 20,	CHKSUM= 447
31450	44, 4F, 4C, 4C, 4F, 57, 49, 4E, 47, 30,	CHKSUM= 721
31460	4C, 49, 4E, 45, 53, 20, 43, 4F, 4E, 54,	CHKSUM= 719
31470	41, 4F, 4E, 20, 54, 48, 45, 20, 52, 54,	CHKSUM= 472
31480	52, 49, 4E, 47, 2E, 2E, 2E, 00, 53, 54,	CHKSUM= 409
31490	52, 49, 4E, 47, 20, 54, 4F, 4F, 20, 4C,	CHKSUM= 484
31500	4F, 4E, 47, 20, 50, 52, 45, 53, 53, 20,	CHKSUM= 489
31510	41, 4E, 59, 20, 48, 45, 59, 00, 4E, 4F,	CHKSUM= 434
31520	20, 42, 41, 53, 45, 43, 20, 50, 52, 4F,	CHKSUM= 459
31530	47, 52, 41, 4D, 4D, 45, 20, 4F, 4E, 20,	CHKSUM= 454
31540	4D, 45, 4D, 4E, 52, 59, 00, 54, 48, 45,	CHKSUM= 478
31550	52, 45, 20, 41, 52, 45, 20, 4E, 4F, 20,	CHKSUM= 420
31560	4F, 43, 43, 88, 52, 52, 45, 4E, 43, 45,	CHKSUM= 745
31570	53, 20, 4F, 44, 20, 54, 48, 45, 20, 52,	CHKSUM= 434
31580	54, 52, 4F, 4E, 47, 2E, 2E, 2E, 2E,	CHKSUM= 418
31590	00, 20, 20, 52, 45, 53, 55, 4C, 54, 53,	CHKSUM= 434
31600	20, 54, 4F, 20, 53, 43, 52, 45, 45, 4E,	CHKSUM= 475
31610	20, 20, 4F, 52, 20, 50, 52, 4F, 4E, 54,	CHKSUM= 454
31620	45, 52, 20, 20, 20, 50, 52, 45, 53, 53,	CHKSUM= 444
31630	20, 70, 20, 4F, 52, 20, 70, 20, 00, 41,	CHKSUM= 581
31640	4E, 4F, 54, 48, 45, 52, 20, 52, 45, 41,	CHKSUM= 713
31650	52, 43, 48, 3F, 3F, 20, 20, 50, 52, 45,	CHKSUM= 442
31660	52, 53, 20, 79, 20, 4F, 52, 20, 6E, 00,	CHKSUM= 454

```

1300          RESEARCH A BASIC PROGRAMME FOR #
1301          MANY STRING INPUT.DEFAULT LOAD #
1302          # ADDRESS=31000.TYPE FCLEAR1 #
1303          # CLEAR50,31000 BEFORE LOADING #
1304          # BY DENNIS HILL (1987) #
1305          *****
7910  7910          DRD   31000
7911          PUT   5000
7912  900C          DUTCH EQU  *900C
7913  900F          DUTCHF EQU *900F
7914  A06A          MATT EQU  *A06A
7915  BA77          CLS   EQU  *BA77
7916  457A          DUTNUM EQU *457A
7917          *****
7918  B8A77         JSR   CLS  ICLS IN ROM
7919  6F8D02AD      CLR   FLAGE,PCR
7920  8C7F001F     LDD   I(1,F):CHECK FOR
7921  10830000      CHPD  00 ;PRGS. IN
7922  2407         BNE   START  INMEMORY
7923  306D01F1     LEAX  NOMES,PCR
7924  894E         BSR   OUTSTR
7925  29          RTS

```

```

7930
7930
7930
7930
7930 808A77
7933 308D0174
7937 8061
7939 806C
793B 803E
793D
793D
793D
793D 808A77
7940 1700A2
7943 488D0283
7947 2600
7949 4F8D027F
794B 308D01EA
7951 8047
7953 170118
7956
7956
7956 8600
795B 80800C
795B 4F8D026D
795F 308D0234
7963 8030
7965 80A0EA
7968 818F
796A 27C4
796C
796C
796C
796C
796C 8E028D
796F 8FA6
7971 7F028D
7974 7F028E
7977 7F028F
797A 39
797B
797B
797B
797B 808A77
797E 308D0185
7982 8D16
7984 8DA0EA
7987 8153
7989 27C4
798B 8150
798D 260C
798F 4C8D0239
7993 2004
7995 4F8D0233
7999 39
799A
799A
799A
799A 8680
799C 2601
799E 39
*****
* PRINT PROMPT MESSAGE *
*****
* AND INPUT SEARCH STRING *
*****
START JSR CLS
LEAX PROMPT,PCR
BSR OUTSTR
BSR INSTR
BSR PRTER ;PRINTER??
*****
* DECRUNCH,SEARCH,PRINT LINE NO# *
*****
JSR CLS
LEBR GETLN
TST NU,PCR ;FOUND??
BNE RETURN
CLR FLAGB,PCR
LEAX NOTFND,PCR
BSR OUTSTR
LEBR PRTSTR
*****
* ANOTHER SEARCH?? *
*****
RETURN LDA #900
JSR OUTCH
CLR FLAGB,PCR
LEAX NORMES,PCR
BSR OUTSTR
JSR WAIT
CHPA #'Y
BEG START
*****
*CLEAR INPUT BUFFER ELSE ERROR *
* ON RETURN TO BASIC *
*****
LDX #92DD
STX #A6
CLR #28D
CLR #02E
CLR #23F
RTS
*****
* OUTPUT TO PRINTER?? *
*****
PRTER JSR CLS
LEAX DEVRES,PCR ;RESULTS
BSR OUTSTR ;TO
JSR WAIT ;PRINTER??
CHPA #'S
BEG NOPRT ; NO.
CHPA #'P
BNE PRTER ;INVALID
INC FLAGB,PCR
BRA YESPRT
NOPRT CLR FLAGB,PCR
YESPRT RTS
*****
* PRINT A TEXT STRING *
*****
OUTSTR LDA ;X*
BNE OUT1
RTS

```



```

799F BDB00C      OUT1  JSR      OUTCH
79A2 1700E9      LBR  DEVICE  IPRINTER??
79A5 20F9        BRA  OUTSTR
79A7                *****
79A7                # INPUT STRS TO SEARCH FOR AND #
79A7                + STORE LENGTH IN LENSTR 0
79A7                *****
79A7 5F          INSTR  CLBE
79A8 308D020A    LEAX  STRING,PCR
79AC 3410        GETCH  PSWG  X
79AE BDA0EA      JSR  WAIT  IKEY PRESSED??
79B1 3510        PULS  X  IYES
79B3 810D        CMPA  #00B IENTER??
79B5 271A        BEQ  FIN  IYES
79B7 B8B00C      JSR  OUTCH  INO PRINT IT
79BA 810D        CMPA  #00B IBACKSPACE??
79BC 2407        BNE  STORE  INO
79BE 301F        LEAX  -1,X  IYES.GO BACK
79C0 5A          DECB  IONE IF NOT
79C1 28E4        BPL  INSTR  INEG VALUE
79C3 20E7        BRA  GETCH  ITRY AGAIN
79C5                *****STORE SEARCH STRINGS*****
79C6 A780        STORE STA  ,X
79C7 9C          INCB
79C8 C114        CMPE  I20 IMAX LENGTH
79CA 23E0        BLS  GETCH  IOK
79CC 8D08        BGR  TODDIS  ITOO LONG
79CE 17FF5F      LBR  START
79D1 E78D1F&    FIN  STB  LENSTR,PCR
79D5 39          RTS
79D6                *****
79D6                # STRING TOO LONG #
79D6                *****
79D6 840B        I00B10 LDA  #00B
79D8 B8B00C      JSR  OUTCH
79DB 308D0121    LEAX  ERROR,PCR
79DF 8387        BSR  OUTSTR
79E1 BDA0EA      B101 JSR  WAIT
79E4 39          RTS
79E5                *****
79E5                # DECRUNCH LINE, SEARCH IT AND #
79E5                # PRINT LINE NUMBER IF FOUND #
79E5                *****
79E5 4F8D0181    GETLN  CLR  NU,PCR  ILINE# FIN.
79E9 9E19        LBX  #19 ISTARTOF PROG.
79EB 10A884      NXTLN  LBY  ,X  IINX LINE ADD
79EE 108C0000    CMPE  #0  IEND OF PROG?
79F2 277C        BEQ  END  IYES
79F4 3420        PSWS  Y  ISAVE NXT ADD
79F6 ED02        LBU  2,X  IGET LINE NO.
79F8 3440        PSWS  W  ISAVE IT
79FA B8B00B      JSR  #B0B IDECRUNCH
79FD 3540        PULS  W  IRECOVER
79FF                *****POINT TO DECRUNCHED TEXT*****
79FF 8E028D      LBX  #A028D
7A02 318D0180    RESET  LEAY  STRING,PCR
7A06 E88D01C1    LBR  LENSTR,PCR
7A0A A680        N1XCHR  LDA  ,X
7A0C 48          TSTA  IEND OF LINE?
7A0E 2602        BNE  SEARCH  INO
7A0F 205A        BRA  NXTLN2  IYES

```

```

7A11 *****
7A11 * SEARCH LINE FOR STRING *
7A11 *****
7A11 A1A4 SEARCH CMPA ,Y ;CHARACTER
7A12 2702 BEQ MATCH ;MATCHED??
7A13 20EB BRA RESET ;NO
7A17 5A MATCH DECB ;YES
7A18 2704 BEQ PRTRHS ;ALL MATCH
7A1A 3121 LEAY L,Y ;NO
7A1C 208C BRA NXTCHR ;TRY AGAIN
7A1E *****
7A1E * PRINT LINE NUMBER IF MATCHED *
7A1E *****
7A1E 8D801A8 PRTRHS TST NU,PCB ;1ST ONE GO
7A22 2615 BNE CHKSC ;EMESSAGE
7A24 860B LDA #00
7A26 8060 BSR DEVICE
7A28 30800AA LEAX ENDREC,PCB
7A2C 17FFA8 LBR# OUTSTR
7A2F 8040 BSR PRTR#R
7A31 *****
7A31 840B LDA #00
7A33 8800C JSR DUTCH
7A36 17004F LBR# DEVICE
7A3F *****
7A3F 8C88 CHKSC LDS #88 ;SCREEN
7A3B 1883009F CMPD #09F ;FULL??
7A3F 2502 BLO PRTLN ;NO
7A41 8D4F BSR SCFULL ;YES
7A43 1F30 PRTLN TR# U,B
7A45 3406 PSHB B
7A47 8D957A JSR OUTNUM
7A4A 8D8017E TST FLAGB,PCB ;OUT TO
7A4E 2703 BEQ HRCOPY ;PRINTER?
7A50 0A6F BEC #6F ;YES,SET
7A52 0A6F BEC #6F ;TO -2
7A54 3506 PULB B
7A56 8D957A JSR OUTNUM
7A59 0F6F CLR #6F ;GET TO 0
7A5B 2002 BRA CORNA
7A5D 3506 HRCOPY PULB B
7A5F 842C CORNA LDA #", ;PRINT A ,
7A61 8D800C JSR DUTCH
7A64 170025 LBR# DEVICE
7A67 8C8B013F INC INC NU,PCB
7A6B 3510 NXTLN# PULB X ;ADD OF NXT LINE
7A6D 18FF7B LBR# NXTLN
7A70 39 END RTS ;END OF BASIC PROG.
7A71 *****
7A71 * PRINT SEARCH STRING *
7A71 *****
7A71 318D0141 PRTR#R LEAY STRING,PCB
7A75 86D0152 LBR# LENSTR,PCB
7A7F 2100 PRINT# CMPD #0 ;PRINT THE
7A7B 2601 BNE DEC ;SEARCH
7A7D 39 RTS ;STRING
7A7E 5A BEC BECB
7A7F A6A0 LDA ,Y+
7A81 8D800C JSR DUTCH
7A84 8D0C BSR DEVICE ;PRINTER??
7A86 20F1 BRA PRINT#

```

```

7488 *****
7488 #OUTPUT TO PRINTER IF FLAG SET##
7488 *****
7488 688D0140 DEVICE TST FLAG,PCR
748C 2F03 BLE DEVDIS
748E 8D800F JSR OUTCHP
7491 39 SEVEND RTS
7492 *****
7492 # SCREEN FULL,SO PRINT MESSAGE #
7492 # AND WAIT FOR KEY PRESS #
7492 *****
7492 3418 SCFULL PSHS X,D
7494 308C7F LEAH SCMESS,PCR
7497 648D0131 BEC FLAG,PCR ;PRINTER
7498 17FEFC LBSR OUTSTR ;OFF AND
749E 6C8D012A INC FLAG,PCR ;ON
7AA2 8D40EA JSR WAIT
7AA5 8DB477 JSR CLS
7AA8 3516 PULS X,D
7AAA 2F RTS
7AAB *****
7AAB 454E544552 PROMPT FCC /ENTER SEARCH STRING/
7ABE 20414E4420 FCC / AND PRESS ENTER/
7AD1 2020202000 FCC / /,0
7AD6 5448452046 ENDRES FCC /THE FOLLOWING LINE#/
7AE7 20434F4E54 FCC / CONTAIN THE STRING/
7AF0 2E2E2E00 FCC /.../,0
7B00 525452494E ERROR FCC /STRING TOO LONG /
7B10 5053455353 SCMESS FCC /PRESS ANY KEY/,0
7B1E 4E4F204241 NAMED FCC /NO BASIC PROGRAM/
7B30 20494E2040 FCC / IN MEMORY/,0
7B3F 5448455245 NOTFND FCC /THERE ARE NO OCCUR/
7B48 52454E4345 FCC /RENCES OF THE STRING/
7B60 472E2E2E2E FCC /0..../,0
7B67 2020524553 DEVRES FCC / RESULTS TO SCREEN/
7B7A 20204F5220 FCC / OR PRINTER PRES/
7B8D 532073204F FCC /G & OR p /,0
7B97 414E4F544E HORRES FCC /ANOTHER SEARCH?/
7BA7 2020505345 FCC / PRESS y OR n/,0
7BBA STRING RMB 20
7BCA HU RMB 1
7BCC LEND TR RMB 1
7BCC FLAG RMB 1
7BCC

```

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Winners and Losers

Every month
Gordon Lee will
look at some prize programming

WHEN the American research physicist Frank Gray first developed the code series which now bears his name, he could have had no idea of the problems which it would cause our competitors nearly half a century later!

Regular entrant to the competition D.J. Gray (note that name!) thought he had cracked it by contacting his Uncle Frank, only to be told that "it wasn't him and he had only been in America once and could I please not tell Auntie Betty". Sorry, D.J., I hope that hasn't bothered too many family sessions.

However, undaunted, D.J. along with a fair few others, managed to track the code to produce a Gray's Binary converter. And what a selection of entries there were, including a number of multi-page treatises using techniques reminiscent of Exclusive-OR gates, flipflops (which I always thought were a type of footstep), Boolean functions, and Karnaugh maps. Fairness seems a little daunting then for pure simplicity, who's best? Fred Taylor of Middleborough, whose 'base-twos' programme given here (Listing one), although not error trapped (Fred did include a longer error-trapped program) it is wonderfully straightforward and does the job using the same algorithm as that outlined on the Answer page of the June issue.

Listing two is an even shorter program using this same algorithm, and has the added advantage that it can be used to convert Gray codes of infinite length! It leaves its interested readers to work out the logic behind this listing.

I'm indebted to Fred Wilkins of Stone in Staffordshire for some additional notes on evaluating a Gray code directly into its decimal equivalent. Each Gray code 'bit' which is set to 1 is evaluated using the fol-

lowing formula where N is the bit position counting from the right-hand end. Each of the values of the bits set to 1 are then alternately added and subtracted. For example, taking the Gray code 101001001 we would get:

N	0	1	2	3	4	5	6	7	8
2^N	1	2	4	8	16	32	64	128	256
Gray Code	1	0	1	1	0	0	1	1	0
Decimal	100	-20	+40	-80	+160	-320	+640	-1280	+2560

Decimal equivalent = 880

Write on the subject of counting from the right-hand end, I am taken to task by Randy Langshore of Chesterfield, over the answer to the September '87 competition. This was the calculation of a 34532-digit number or at least the digits at positions twenty-thousand and one to twenty-thousand and ten. "Why", he asks, "are the digits counted from the left to the right" and not, as Randy had done, from the right (decimal point) and I suppose that the logical answer would be that, had the answer been, say, 471397921, and I had asked for the fourth digit, the answer would

have been 3. Consequently, the fact that the number has many thousands of digits will not affect the end from which you count (OED).

I can afford to be flippancy without fear of a punch on the nose from Randy, as he fails from Chesterfield USA and not Chesterfield UK! Finally, on the subject of the De-ORers (and I'm still trying to work out Robin Reisman's), my personal favourite comes from D.J. Gray.

"There is no doubt that I am the most eligible person to send to a paradise island. I have my own eight records and solar powered record player. I have no need of the complete works of Shakespeare and am prepared to know the family bible. My De-orger will also ensure the luxury items, so all I can ask for is a regular delivery of Dragon User (Marked X!)."

As a slightly harassed compiler of competition problems, I too would put forward a strong claim for eligibility. Like D.J. Gray, I too would happily take the works of Shakespeare, but would much prefer to lug up the man himself, if only to show others at him! (And on that enigmatic note ...)

Listing 1

```
10 INPUT "Gray Code" : G$
20 FOR I=1 TO LEN(G$)
30 G=OR(G$[I],I,1)+I^2:G$=G$+G
40 IF I=LEN(G$)+1 THEN PRINT G$ : G$=""
50 G$=G$+G$ : I=I+1
60 PRINT "Decimal Code" : G$
```

Listing 2

```
10 G=0
20 G=OR(G$[I],I^2)+I^2:G$=G$+G
30 PRINT G$ : I=I+1:G=0
```

Vive les differences

Graham Smith compares the Dragons 64 and 32

WITH so many Dragon 64s becoming available on the second hand market at reasonable prices (in the region of £30 to £75), I am sure that many people will be considering if it is worth buying one. Before I describe the main differences between these Dragons, I will just cover a few of the possible reasons for buying a 64.

If this will be your first Dragon (where have you been?), and you only intend to play commercially available games (and be honest here, nobody will think it justifies a computer by saying they want to do their home accounts on it), so what is not much to outcry for a good machine, but almost all the games you will play will run on a 32 which can often be picked up for half the price and you will never use the extra facilities available on the 64. Having said that, if you can afford the extra few fells to buy the 64, you may thank yourself later when your interests widen out.

If you have a 32 and fancy a 64, remember you won't get much for the 32 if you try to sell it, especially if you are one of those people who paid the full £179 when they were new. I would advise you to keep it for backup or spares, as many of the bits, such as the keyboard or power supply, can be swapped out, and they would cost more to replace than you would get for the old 32.

The built-in RS232 port on the 64 can be enough to justify buying for anyone interested in electronic mail systems (such as bulletin boards) as adding an RS232 port to a 32 usually means the cartridge port. If you are interested in an example, the Magics Electronics RS232 kit assembly kit for a Dragon 32 costs just about £14, has no noise, and fits in the cartridge port.

Anyone wanting to use one of the alternative operating systems (FLEX, OS-9 or

MS-DOS) must have a Dragon 64 (or a suitably upgraded 32), and a disc drive.

Now to describe the main differences between the two machines. Externally, the 64 is grey rather than cream, the label says Dragon 64 and on the side by the joystick ports is another socket marked 5.6D, which is the RS232 port. Internally, the circuit board is similar to the 32 with a few extra chips squeezed in. These are the extra ram chips and a rom holding the reassembled Basic interpreter. It will come back to this rom later.

There are a few minor differences between the Basic on the 32 and the 64. The new commands CLORD and CLORDM are similar to the CLORD and CLORDM but are directed at the 5.6D port for transferring files from another computer. This port can also be used with a serial printer (or PCDS, SHOPPI) and the PRINTD or

Continued on page 18

GOSUB

Paul Burgin captures screens the simple way.

HAVING completed or being about to write a programming masterpiece, it's always a great improvement to include well presented and colourful tables, menus or title screens. However, working out CHR numbers, PRINT statements and centering is often quite a task, especially where graphics are concerned, so here's a program to cut out this hard work.

Yes, this is actually a program which writes Basic! After all, why spend hours producing something which the computer can do in less than fifteen seconds?

The program is written in machine code and is very simple to use. Simply load a Basic program and give Gosub Writer a screen, and it will write a loop onto the end of your program, which can be called using GOSUB.

When the program runs, it scans the screen from top to bottom, coding it as it scans. The first line of the gsub is always a ROM statement and followed by a GUS. The lines are numbered in tens starting from the next multiple of 100. The routines end with a RETURN. Nothing escapes the eye of the computer, so that when the routines are called, it makes an exact replica of what was on the screen.

Most of the lines will be PRINT statements, which can direct text, or for multiple characters, the computer will choose to use the STRING\$ command. The program will also code graphics using the CHR\$ command, and characters which cannot be printed will be POKed to the screen. For position, the computer will use the PRINT# command where necessary and to ensure that the screen doesn't scroll, the last space is always POKed to it.

The length of the lines are also kept under control, with the computer starting a new line for every screen line and extra when too many statements build up.

Entering the program

First type **Listing one**, the Basic loader and run it. You must now enter all the data for the machine code held in **Listing two**. When you first start, enter 1038 for the start address, then enter each line of data digits, followed by the checkstars. Any lines containing errors will need to be entered again, if you need to break, or before typing the whole listing, press BREAK and save using:

```
CGSAVE "GAWRITER",1038,5,0
```

You can then continue at any time by reloading the loader and machine code using CLOADM. Don't forget to note the location from which you have to carry on.

When you have typed the whole listing (location = 3000) press BREAK. If you have a Dragon 64, you must do the following patch:

```
POKE 2945,1POKE 2971,1POKE 2971,POKE 3004,2
```

To save Gosub Writer, type:

```
CGSAVE "GAWRITER",1038,3000,1038
```

The program is now ready to use, but it's unlikely that you can do much with it unless you have a screen editor to create the screens in the first place. For those who do not, I provide one free, but if you do have one, and consider it to be more resident with Gosub Writer and a program, you will need to know the following. The entry address for Gosub Writer is 1038. The screen to be coded is assumed to be positioned from 1024 to 1038 and locations 29 and 28 must point to the end of Basic; locations 27 and 26 must equal locations 25 and 26, plus 2, if there's no Basic.

To load screens manually from a tape for testing Gosub Writer use:

```
POKE 1042-CLOADM-EXED 1038
```

This poke allows loading without the cursor flashing (it corrupts the screen).

To enter the screen editor use the loader to enter the short patch, listing three, then an direct commands type:

```
POKE 25,14POKE26,14POKE2625,14POKE2643,14WRITE
```

Next, type in **Listing four** very carefully. DO NOT RUN IT YET. When typed, you can save Gosub Writer, the patch and Basic screen editor by typing:

```
CGSAVE "GAWRITER",1038,1043,1044
```

Now that everything is installed you can take advantage of the features of Gosub Writer using the program is simple.

1) CLOAD the receiving Basic program, if any. Do not PCLEAR below PCLEAR 3
2) Load Gosub Writer using CLOADHEREC

Don't worry that there are two Basic programs in the computer. The short patch takes care of this.

The screen editor is menu-driven and supports cassette facilities. The keys for editing are as follows:

ENTER — Swap between text/graphics mode
Arrow — Move cursor and close

Arrow + shift — Move cursor
0 to 8 — Colours for graphics
CLEAR — Return to menu
SHIFT + 0 — Swap between upper/lower case (use for numbers)

If all this typing is too daunting, I will be happy to supply the complete program and editor on tape for £200. Payable to Paul Burgin, 18 Moorcroft Road, Sheffield S10.

Listing 1

```
10 'HELLO,WRITER - Enter each line of  
20 'digits and then input the checkstar.  
30 PCLEAR2:CLS:PRINT"START FROM#";  
40 PRN7CHR$(0)GOTO1:HEINPUT";:PRINTCHR$(  
50 FORI=1TO4STEP2:G=VAL("09")+100*(I+V,  
2)::G=G+CHR$(POKE5,2):G=5+1:GENT  
60 PRINT" =";:PRINTCS:IFCS<10H THENG=1040  
70,5:G=0:PRINT"ERROR - ENTER#";G=64:G#  
70 GOTO49
```

Listing 2

```
1530:808074F88C88F22F78000= 1474  
1540:840C887C19180C888C22287C= 784  
1550:178F8822888848F8800788= 1250
```

```
1570:479E198F8848E0798C48F88= 1490  
1580:124E9F88E28F8848E888888= 1799  
1590:888827888888E28F88E428E2= 3142  
1600:808848E828F88C8E8848F= 444  
1620:88888888888888888888888= 1319  
1632:8838888848F888288888888= 8433  
1644:8F88801288478E888888879F= 1347  
1656:88478F88878E884888879F88= 1586  
1668:878F12888F8878888818827= 1326  
1680:878828879F8F788F8888888= 1143  
1692:9F888881878888788F88E88= 1447  
1704:888F8878F8888888888101= 1432  
1716:278288887F8888888878E887= 1034  
1728:88879F8887C888888888888= 1617  
1740:7C88F888887888888888888= 1385  
1752:28388888888888888888888= 843  
1764:452888F888F8888888888888= 1278
```

1776+ED261C0E6F080798E22814226+	1374
1780+204240414E46303808020430+	578
1800+4F44444430000000079500799+	866
1812+E7E0A8F7C0A803207900A49180+	1679
1824+840000A8000101012002004700+	1312
1836+8E000E03000200F0000000000+	1524
1848+8C000E01023FF79127000020+	1216
1860+800033000079F004709120040+	1120
1872+6E00718D079000790000002+	1536
1884+6F00F006F040000002300270+	1557
1896+1E0F1E0F1F0F1F0F00002030+	1160
1908+2C1E0F00F1C00300F0250040+	1244
1920+8E001E0F000F000000000000+	1120
1932+10000000000002100F023000+	1410
1944+8F00F77F00F020120000F70+	1526
1956+800F00F739120000F70F000F+	1530
1968+000F00F100000020F40000020+	1650
1980+000200000000002012000000+	1222
1992+8F000E007900000000F00000+	1651
2004+F0019F000E2007000000300+	1440
2016+8F000E000000000000000000+	1544
2028+8E000E000000000000000000+	1721
2040+8E00801200A00F0100253700+	1102
2052+80090F000700000C100F0000+	1620
2064+9F00000079F0000000007900+	1470
2076+80000F000F00000000000000+	1172
2088+9FF000F00FF000F00000000+	1707
2100+80700000000000000079F000+	1201
2112+807900010700000000000000+	1340
2124+80700F000070100000000000+	1455
2136+30018F000720000000000000+	1340
2148+873000700000010127000000+	1071
2160+03000F0007000017000F000+	1720
2172+800F00112000000000000000+	1127
2184+8007000079F00000101001020+	1202
2196+800F0000700000700000000+	1304
2208+802000000000700000101001+	1210
2220+802000000100100000000000+	747
2232+80200070000010700F0000000+	1190
2244+30018F0007000F000F0100001+	1424
2256+20407000F000000000000000+	1160
2268+0900000F0000000000007000+	1540
2280+80F000079F00000000790020+	1547
2292+800790F0000F00FF00000000+	1620
2304+80002000079FF0000140F000+	1499
2316+8F0000000000000000000000+	1413
2328+879F000F0000079F00000000+	1500
2340+802000079FF000F00FF00000+	1400
2352+800000002000079FF0000140+	1420
2364+F0000F000000000000000000+	1540
2376+80090F00077000F7000000700+	1402
2388+800F0007000F0000079F0100+	1630
2400+8079F002000079FF0000140F0+	1500
2412+800F000000002000079FF000+	1241
2424+8F700200079FF700F00000001+	1546
2436+8010F2300000000000000000+	1300
2448+812004000000000000000000+	1313
2460+810025300022000079F00000+	1111
2472+879F00070000000000000000+	1300
2484+80002000079FF000001010F20+	1205
2496+800040000000000000000000+	837
2508+8000010700F00000F0012220+	1400
2520+1100079F0000000079F0000+	1520
2532+879F007000079F0000000000+	1327
2544+800000079F00240000079020+	1250
2556+80079F0000000079F0000F70+	1411
2568+8000000000000079F0000F70+	1411
2580+80079F0000000079F0000F70+	1411
2592+8000000000000079F0000F70+	1411
2604+80079F0000000079F0000F70+	1411
2616+8000000000000079F0000F70+	1411
2628+80079F0000000079F0000F70+	1411
2640+8000000000000079F0000F70+	1411
2652+80079F0000000079F0000F70+	1411
2664+8000000000000079F0000F70+	1411
2676+80079F0000000079F0000F70+	1411
2688+8000000000000079F0000F70+	1411
2700+80079F0000000079F0000F70+	1411
2712+8000000000000079F0000F70+	1411
2724+80079F0000000079F0000F70+	1411
2736+8000000000000079F0000F70+	1411
2748+80079F0000000079F0000F70+	1411
2760+8000000000000079F0000F70+	1411
2772+8100079F0000000000000000+	1320
2784+879F00000000000000000000+	1241
2796+F00000000000000000000000+	1643
2808+800F00000000000000000000+	1100
2820+70079F000000000000000000+	1249
2832+30000079F000010000079F00+	1279
2844+F100F000F10100001400000F0+	1543
2856+3000F000F100000000000000+	1320
2868+800F10000000000000000000+	1603
2880+800F10000000000000000000+	1123
2892+8F0000700000000000000000+	1624
2904+80079F000000000000000000+	1374
2916+8FF0000F0000F0000F000000+	1757
2928+800000000000000000000000+	1340
2940+10000079F0000000000000000+	1317
2952+8079F0000071F0000F0000000+	1261
2964+8000F0000000000000000000+	1504
2976+8000F0000001000000000000+	1190
2988+10000079F2010000000000000+	1200
3000+800700000000000000000000+	1095
3012+80079FF000070000000000000+	1403
3024+800000000000000000000000+	790

Listing 3

350+0E00000000700079F00000+	1152
350+0E0000000000000000000000+	1092
3600+0000002075270F10F0000000+	1007
3620+0E499F1000040F0000000000+	1430
3632+9F00000479F1000000000000+	1042
3644+9F10000000479F1000000000+	1070

Listing 4

10 CLS:000000000000000000000000	040
20 CLS:000000000000000000000000	040
30 CLS:000000000000000000000000	040
40 CLS:000000000000000000000000	040
50 CLS:000000000000000000000000	040
60 CLS:000000000000000000000000	040
70 CLS:000000000000000000000000	040
80 CLS:000000000000000000000000	040
90 CLS:000000000000000000000000	040
100 CLS:000000000000000000000000	040
110 CLS:000000000000000000000000	040
120 CLS:000000000000000000000000	040
130 CLS:000000000000000000000000	040
140 CLS:000000000000000000000000	040
150 CLS:000000000000000000000000	040
160 CLS:000000000000000000000000	040
170 CLS:000000000000000000000000	040
180 CLS:000000000000000000000000	040
190 CLS:000000000000000000000000	040
200 CLS:000000000000000000000000	040
210 CLS:000000000000000000000000	040
220 CLS:000000000000000000000000	040
230 CLS:000000000000000000000000	040
240 CLS:000000000000000000000000	040
250 CLS:000000000000000000000000	040
260 CLS:000000000000000000000000	040
270 CLS:000000000000000000000000	040
280 CLS:000000000000000000000000	040
290 CLS:000000000000000000000000	040
300 CLS:000000000000000000000000	040

Display Switcher

Ken Smith devises a cheap hardware screen inverter.

REGULAR readers will know that for some time, dragons have been complaining about the poor display they get when they connect their treasured machines to a monochrome monitor. When I purchased a monitor, I found this disappointment was almost justified. You buy a monitor to improve the display, but what you get is considerably worse than with a black and white television. I have mentioned before in these pages that some software (BASIC? for instance) which simulates a white screen gives an acceptable display. However, most programs which require a good display, such as word processors, use a black on green display which is tedious and barely readable. It seems that the pager signal exaggerates the poor picture quality. One reader did suggest that the Dragon's monitor output was for colour only and this, combined with my own experience, set me thinking.

Not being an electronics expert, I was looking for a software switch-to-change my green screens to white and was meeting with very little success. During this search it was suggested that I might be better off trying to do the job with hardware. What follows, is the result of my investigations.

Two cures

There are two ways of curing this problem, both of which involve disposing of the colour.

The first cure is to remove the chip which contains the colour circuit. On some machines, this is a plug in chip and so can be easily removed or replaced. However, on others it is soldered in and unless you are capable with a soldering iron, it is best not attempted. My machine falls into the latter category and the whole idea seemed quite what drastic, so I abandoned it.

The second option is to switch off the colour crystal. This can be done relatively easily and can be made switchable. This second option seemed far more promising and after months of thinking about it (my soldering is lousy! this was the course I embarked on). The materials required are listed below. Total cost is about £1.50 and the job takes about fifteen minutes. The materials required are one miniature single pole toggle switch, one 0.1 micro farad capacitor of any voltage over 10V and half a metre of 0.8 mm insulated stranded copper wire.

Switch

The first task is to find a suitable site for your switch and drill a 3mm hole to mount it. Choose a position just under the left side

of the keyboard, making it possible to switch from colour to monochrome without straying far from the keys.

Next, solder one of the capacitor leads to one of the switch terminals. Locate the crystal, this is a small metal can, and is usually marked 4-430F54H4 or something similar. Strip and tin one end of the wire.

The second option is to switch off the colour crystal. This can be made switchable. After months of thinking about it (my soldering is lousy) this was the course I embarked on.

then solder this to one of the crystal leads. Run the wire up to the switch and cut it as short as is practical.

Strip and tin the end of this wire, then solder it to the vacant terminal on the switch.

Strip and tin one end of the remaining wire and solder it to the other lead of the colour crystal.

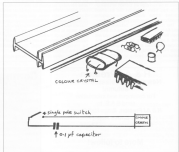
Run this wire to the free tail of the capacitor. Again cut the wire as short as practical. Strip and tin the end, then solder it to the free tail of the capacitor.

Some points to remember are: don't use an electrolytic capacitor. These have to be connected to the correct polarity or they go pop; don't use coaxial cable, which acts like a capacitor on its own so that the switch will be useless. On some machines the area around the crystal is so crowded, it might be easier to remove the motherboard from the machine and attach the wires to the underside at the point where the crystal is soldered into the board. Finally, don't forget to unplug everything but the soldering iron before you start. All that now remains is to plug in and switch on.

Even TV

The result should be a much sharper picture, both on text and Hi-Res screens and being switchable it will not affect the programs that require colour. In fact the display in PMODE is so much improved it would even be suitable for those using colour televisions.

My thanks go to Ted Baccarelli who provided the information and to Les Outteridge who was kind enough to respond to my letter on the subject. The funny thing is that Ted told me I was correct knowledge, so why were so many of us still in the dark? Perhaps someone else has some secrets they could share.



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Crossword

Please get your answers in to Dragon User Crossword Department by Dragon User, the end of the month on the front cover.

The tenth Dragon Crossword wonders what sort of hour it is in the morning this is, as the mistress calls up-lifting and dumps a bottle of exciting milk on the doormat. There is a message taped to the bottle. It is from Gordon Wright of Dunstons. "This is the only test advertisement I have ever failed" says he. "Do you have Misto Maker in your Bottomless Box? Or 'Chuckle Egg' (can't bear anything, Gordon... it's never been 150ms of Chester field wants Postfallor A/Bell. What sort of games, Brian. I'll tell you what we see in. The phrase is TEXT ADVENTURE.

There will be a couple of free tapes from the Editor's Magic Bottomless Box for the first correct entries out of the lot each month. You can try telling us which tapes you'd like — you never know, we may have them.

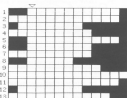
And you don't have to cut up your Dragon User — entries on a photostat or plain piece of paper will do, as long as we can read them.

- 1 Dobby talk — where he dips his tail into? (7, 2)
- 2 Massive potash which is a little cooler than water (8, 4)
- 3 and 4 Formula One comes to Tangle? (7, 8, 4)
- 4 see 3.
- 5 and 6 Toy model holds in a spin, for big race destruction (10, 5)
- 6 Don't despair, balloons are also one of these (7)
- 7 Keep calm! You cannot clip this oddily enough! (4, 5)
- 8 see 5.
- 9 For this game, put your money on the hand! (10)
- 10 If you and give over the company, there's a ding work about (8, 4)
- 11 Preface sight about future offensive craft. (5, 7)
- 12 Sounds like eternal repose could lead to high-temperature. (7)
- 13 Upris mischief again — so hangs in as in trouble! (11)



by Terry and Derek Probyn

All this month's answers are names of Dragon software. When the crossword is complete, the column marked with an arrow will spell out a phrase.



Write: ADVENTURE

Pete Genard cracks down on adventure utilities.

Following on from last month's article, I read a review (in another magazine and for another computer, but the point remains the same) of an adventure writing utility. The point being made in the review was that with the aid of this utility it was possible to write superb adventures of a standard to match any commercial adventure currently on the market. Well, this being a family magazine I am prevented from using the word that I would like, but special objects comes fairly close. A great myth seems to have been built up about such utilities, and although reasonable games can be written with them, as many people have proved, what usually happens is that a flood of mediocre games is released instead. Indeed, I've lost count of the number of parodies of *The Hobbit* or *Cobrae Cave* that I've seen, and never seem to see another one.

The only real point in favour of any utility that I've seen on any computer is that you don't have to produce your own routines like *SAVE* and *LOAD*. They're built in for you. *QUIT ALL* and *DPDF ALL* are usually catered for, as are *RAMSAVE* and *RAMLOAD*. Graphics too are handled more often than not, although you've still got to choose the things on the first place, and if you're an artist like me then you get someone else to do them for you. The final great advantage is that the parser is already constructed, and if it's a sensible utility then it will be able to handle that which we covered in the very first article on writing adventures for your *Dragon*: sentences like *OPEN THE RED CABINET AND LOOK INSIDE IT*, although it might cope with *OPEN RED* and *LOOK*. It would probably do just as well.

Cut it out

A little bit here, while playing adventures rather than writing them. A friend of mine was playing a particular game, and wanted to cut a coupon out of a newspaper using some scissors. However, the adventure-it question could only handle a *VERB* ... *NOUN* format, so *CUT COUPON CUT WITH SCISSORS* was clearly out of the question. In cases like this, said friend followed an interesting procedure. Write the sentence out that you want to type in, even though you know you'll be accepted by the adventure. Then try every possible two word combination until you find one that works. In this instance, I don't think anyone would have come up with the right input unless they had followed just such a procedure. Well, would you have thought of *CUT CUT* if I hadn't pointed you in the right direction? It's a good rule to follow when playing adventures that are restricted to *VERB* ... *NOUN*. But I digress, as usual, so back to adventure writing utilities and their claims to fame.

One of the chief of these seems to be that you don't have to learn to program to use them. Nonsense! I've been conversing a game recently, off and on, that was written of just such a utility and trying to get it to run in good old Basic. Well, instructions like:

if verb="help" then if message 206 wait

I can just about cope with, if the verb typed in is equal to "help" (then print a line feed, print message number 206, then wait for another input from the player) (I have a standard way of printing out messages, so I could easily convert the above into something like:

if verb="H then print mess=206:pause 2550:goto 10



Here we're just looking for a verb number rather than a specific verb, we use the Basic keyword *PRINT* instead of *T*, and use a substitute to print out the message rather than the utility itself. Finally we go to line 10 instead of using the word "wait" to wait for another input. That sort of thing is fairly straightforward, and variations on it were found throughout the game in question. Other commands could reasonably well be incorporated as well:

if verb="T" and not verb="carry" with then if message 206: list with message 215 wait

As with writing messages I have standard routines for doing an inventory and all that the above is saying is that if the player is carrying at least one object then print message number 206 and list all the objects being carried. Later on there would be another line for handling an inventory request if nothing was being carried. But if you just look at a line like the one above, is it any wonder that I require a great pinch of salt when I read claims like "you don't need

to know how to program"? Good grief, it's almost as complicated as learning machine code! Well, almost ...

But to give one final example from the game in question, what on earth would you expect to do with a command like this:

if finrod with then repeat if message 1020: list finrod with object finrod with drop finrod with message 1021: pause 25 wait: goto finrod with

That sort of thing is just ridiculous, but it really is taken from an adventure game written with a utility and I have typed it in exactly as it is shown on the listing which is currently in my left as I write. No non-programmer is going to get to grips with commands of that complexity, at least not straightaway, so the whole point of the thing is to not necessarily be produced by adventures for utilities that tell you that you don't need to learn to program. Please that above command line again and ponder on the wisdom of such a statement.

A good routine

But this is not to knock utilities altogether. If you don't program, and want to have out of the routines essential for an adventure game already written for you, then they do have a lot going for them. Particularly if you are approaching a computer for the first time, and if you think people are no longer approaching *Dragons* then read this month's *Adventure*. That to find a 57 year old who is doing just that.

In the land of *ODD* (Computers Other than *Dragons*), especially the new-ish range of 16 bit monsters, I doubt whether any one person could ever get sufficiently to grips with the machine to be able to write a brilliant adventure on it. In such a case, if a specific adventure writing utility exists then you might as well use it and save months and months of time learning how the machine works. Take a few weeks to learn how the utility works instead, and spend the rest of your precious time developing and writing the game. That's what I'm doing! The problem then, and this applies to Basic adventures on the *Dragon* as much as it does to utility ones on anything else, is to make the game different and to stand out from the crowd. A good utility allows its use to be hidden from the player, and a good adventure writer on the *Dragon* disguises the fact that he's written a copy of a game in Basic. The problem remains the same.

Copy cats

Which brings us nicely to the remainder of this article, and a little chat about disguising adventures.

I should imagine that anyone setting out to write an adventure for the very first time has played at least one game from the genre, and that has an idea of the sort of problems that are being posed in them. I remember my first game, a very humble affair written after I had played *Crossed Cave* and a couple of Scott Adams games. Well someone has to! Anyway, in that humble adventure all I really did was to replace traditional problems with variations on them. Giving the eggs to the troll became giving a bottle of whiskey to an old-timer. Moving a rat to produce a bridge was replaced by ... waving a rat to produce a bridge. Original that, I was proud of that one. Other problems were mostly variations on a theme, but by the fourth or fifth adventure I had progressed far enough along the route to produce original and different problems of my own, with only the occasional borrowing from another game, and that was usually in the form of inventing the problem.

That's probably as good a place to start as any, inventing problems, and whether you're using a utility or not try and stay away from messages that are common to every other adventure in the world.



Something like "You can't do that" can easily be replaced by something else, or can "I don't understand that sentence" or "You're using a word I don't know", both of which seem to crop up in just about every game under the sun.

Oops

So do status lines at the top of the screen, although there's no great harm in having them, as they do pass on a lot of useful information to the player. The phrase "What now?" or "What next?" could probably be got rid of, replacing it with a simple prompt such as "Innate". And something which all adventures should have, and all too few do, is an "OOPS" command, that allows you to take back your last move in the event of something disastrous happening. How to implement such a thing? Well, if you've got a RAM-SAVE routine then you're just about there. Simply perform a RAMSAVE after each input but before acting on it, and then if the player does have a disaster and then wants to be "OOPS" then you just call back the last RAMSAVE'd position and the player can try again. Easy, isn't it? Bye for now.



A thousand apologues to devoted readers of this column for having in last month's pages what we in the trade refer to as a technical disaster. One could conjure up a myriad excuses (but one won't). And collectors of the Adventure Trail will now have two solutions to the Pyramids of Doom adventure, and for that one can only offer a multi-lingual mushy apologise. A straightforward solution and a Professor Deadrock solution have now been printed, and I promise never to refer to that particular adventure again. I hang my head in shame ...

But I quickly pick it up again and pose in to this month's mailing.

First off is a letter from our old friend Nick Hudge. Like many people he has completed a formidable list of adventures for which he is offering help should any require it, and these adventures include *Trabber*, *Apocalypse 67*, *Wilder Factor*, *Justification*, *Synage*, *The King of Darkness*, and *Petigore's Diary*. Anyone wanting to get in touch should write to Nick at Canmore, Huronworth, Ringwater, Somerset TA7 9AJ.

An interesting point arises in Nick's letter, and this is that he is finding it increasingly difficult to get hold of some of the older but still fascinating Dragon adventures. He would be willing to swap them for adventures that he's completed, or buy them if necessary, so perhaps we could start some sort of official Dragon adventure software swap shop. Anyone's prepared to get the ball rolling. Adventures that young Hoopie is keen to lay his hands on are *Madness and the Minotaur*, *Sea Quest*, *Shamans*, *Caravan*, *Castle Island*, *Total Chaos*, *Caverns of Doom*, *White Cells of Doom*, *The Kar Thing*, *Death Mines of Sin*, and (I hope here's left but by no means least) *Diablim*.

If you've got Dragon adventures for sale, or are looking for a particular one, then drop us a line and I'll do my best to include you in the Adventure Trail as soon as time and deadliness allow. Just imagine, Dragon adventures whizzing up and down all over the country! But no piracy, chaps and chapesses, let's stick to original or copies only, keep the backups for your own personal use, as always, and deal exclusively with

originals. I'm sure there's something wrong in that particular line of logic, but we'll ignore it and just repeat that we do not want to see any piracy going on.

Anyroad, as we Northmen are well used to say, Nick has more than a few hints concerning a natty little number called *Return of the King*, without further advice read on and find that he's nearly finished the game (he thinks), and this is how he's managed to get as far as he has ...

1) Find the stone Manda in the Room of Doors, and give her the staff.

2) When she reappears on the planet take the flask from her, go to the Gales, and then type in the instruction *Drop Flask*.

3) Go to Hamlet, chest and open it with the golden key. Get the treasure sack.

4) Take the sack to King Debar, then take it to her Lord Kroll. Leave it there, and what you return you'll find a wand.

5) Get the potion spell and use it in the King's cave before taking the amulet. Now then, says Pete, interrupting sternly. A certain sprightly '87 year old called Jim Finley from Romford you see (those letter dated adverts) tells me that the spell is called the

Banishment spell. We shall return to Jim ere too much water has passed under the bridge. Or something like that.

8) Get fake book from Oracle and go to Nightfall Muzak's cave and drop that very same fakebook. Get the book of skulls and take it back to the Oracle.

9) Take stone, black orb and cyclops's eye to the relevant Room of Many Quanta (sounds like something out of the *Arcanoi Factor* — go to the rooms of many quanta and there you will find ... seventy three pointed see-through plastic which have to be assembled into a working model of a high-tech, number-cumulative telephone. Where was it? Oh yes, take all this to the Room of Many Quanta and you'll get a little something for your troubles.

10) Get the sack of magic grain from the grain store and take it to King Caban, who appears to be getting an awful lot of goodies in this game.

11) When you have the six units (bah!) take them to the time chamber and bind them. This will get you a Time Ring.

Small and blue

All well and good, but that's not all as Nick has got. What does he do with the time ring, how does he pick it up, why can Xandra pick it up when he can't? These and many other questions are also asked by one Keith Partridge of Hackenthorpe in Sheffield, who writes on the smallest sized stationery that I've ever seen. About four inches by three (I refuse to go metric) and coloured a delicate shade of blue. What can it all mean? With an address like Hackenthorpe he ought to be able to take the code of the game's pieces and find out that way, but perhaps not. Self-same problem, apparently only the ring bearer can take the ring, which brings us back to the aforementioned Jim Finley of Moorland.

No, he's not a ring bearer, and is not essential to the completion of the game. He probably wouldn't fit in the packaging anyway. However, he is writing about the same game as our friend Nick, namely *Return of the Ring*, so let's take a look at what he has to say.



Nickstart — "This is the first time you've heard from me as I'm a fully-ventured in the Dragon. (Boy! Who's he trying to eat?) He's pressing on 87 years old!" At least, a reader who doesn't claim to be 5 years old and to have solved his first adventure before he was born. Apparently friend Jim is "hopelessly lazy" and has "waited until now to write in the hope that someone else has done all the work anyway!" I too live in a dreamworld at times, especially on Monday mornings, when you turn the computer on and just stare at it in the hope that it will do something. You sit there and think "come on, you do something for a change, it's always me that does all the typing, you do it for once!" It rarely does. Anyway, back to Jim's letter and his own discoveries on *Return of the Ring*.

On your own

Leaving the town and heading north-south-west will bring you to the oracle. From there due north will bring you to the time chamber, where you need to deposit six units. From there you're on your own because I've only found five (I think, thanks, friend — PDS). If you leave the Shade ring and take the other four to the amplifier you can trade these of items for maximum strength, charisma and intelligence (why don't these things work in real life?). The fourth you can carry into the moon forest where, as you will, "ring one, mutants bite, and you will avoid falling down traps."

Games like living in bottles and this poor genie is in a flap because he's broken his so give him another, or something like it: a flask will do. You haven't got a flask?

Ask the Princess. Deposit the flask in the cave and go out. Then come back to find a happy re-released genie and a key on the floor. This technique is helpful elsewhere: HINT!

To get rid of the Trug, banish him, for that you will need a spell of banishment or eviction, if you're Nick Hedge — PDS. Slight confusion then follows in Jim's letter, as he can't remember where the spell of banishment is, so we'll skip over that bit and carry on later. (It's a note that the Healer is at the Temple of Regeneration. However, all that you can gain there is the restoration of lost fees, so if you haven't lost any, nothing will happen.) There we reach the end of the help on *Return of the Ring*, but Jim does go on to tell me that some obscure tag which shall be unnamed has published a cheat for the game which gives you "unlimited pretty well everything. Why anyone should wish to take all the interest and sense of achievement out of the game I can't imagine!" says Jim, and I totally agree. Hello yes, solutions



even, but if adventures go the way of arcade games and pages and pages are dedicated to ways of getting unlimited fees then we're in a sorry state indeed. Fine for arcade games, I admit! The Expert to the hill, but not for adventures.

A question to think with. A chap called Rob Brown, from Middlesex, has a problem with the *Warrior Fighter*, but fails to actually state what the problem is. He has all the cartridges, has got just the "Cairo bit and the joint nuclear accident bit", and then has given us a halt. Well, without knowing what the problem is not even this mighty column can give you a solution. We need more details! Eye for now.

Adventure Contact

To help puzzled adventurers further, we are instituting an Adventure Helpdesk — simply fill in the coupon below, sending the name of the adventure, your problem and your name and address, and send it to: Dragon User Adventure Helpdesk, 49 Alexandra Road, Hoveville, Middx TW9 4BF. As soon as enough entries have arrived, we will start posting them in the magazine.

Don't worry — you'll still have Adventure that month to read while

Adventure

Problem

.....

Name

Address

A little number

Gordon Lee finds that slicing up pi is not simply a piece of cake.

INSCRIPTIONS into the transcendental number pi have had a long and chequered history: a period of some five thousand years since it was first realised that there was more to this enigmatic number than meets the eye. It was simply the ratio of a circle's circumference to its diameter. However, nothing's 'simple' when it comes to calculating this number. The term 'transcendental' gives a clue to its intriguing nature, that is, it has a decimal value which extends to infinity without recurring

or repeating. Its true value has now been computed to over one million decimal places, although there can be no practical use for such a task!

For most purposes a value to six or seven decimal places is more than adequate, but if you require a greater degree of accuracy, here is pi to 25 decimal places:

3.14159 26535 89793 23846 26433 83279 55289

The problem is, of course, remembering such a sequence, and over the years a number of mnemonics have been developed: sentences in which the number of letters in each word corresponds to the digits in pi. How I hope I write logically so Dragon users can solve problems enjoyably (or their computers' could be one such mnemonic, OK, so I cheated a bit by running two words together near the end. A much better attempt was written by Allan C. Orr at Chicago in 1986:

Now I, even I, would celebrate
in rhymes ungod the great
Immortal Syracuse's fixed nevermore,
Who in his wondrous lore,
Based on before,
Left men his guidance,
How to circle themselves.

Note the American spelling of 'yielded' to ensure a 7 for this digit. The 'Immortal'



PERIMETERS of INSCRIBED and CIRCUMSCRIBED POLYGONS

n	Length of side (Internal)	Length of side (External)	Diameter (Internal)	Perimeter (External)
3	0.8660254038	1.154700538	2.598076211	3.464101614
6	0.5	0.5259828146	3	3.215390308
12	0.259819045	0.2633048955	3.10582854	3.159659943
24	0.1305261923	0.1318868254	3.132628613	3.146086213
48	0.06540312921	0.0654732208	3.139350202	3.142714598
96	0.032711989282	0.03272784426	3.140331395	3.141873049
192	0.01636173162	0.01636282641	3.140452472	3.141662747
384	0.008181139603	0.008181276498	3.140557607	3.141618175
768	0.004090604824	0.004090621137	3.140583891	3.141597033
1536	0.002045306292	0.00204530843	3.140590462	3.141593748
3072	0.00102265369	0.001022653948	3.140592105	3.141592926
6144	0.000511326907	0.0005113269405	3.140592517	3.141592721

Prize

The wheel is come full circle. Can it be that time of year again? Not quite... but looking ahead, Dragonfire Services are offering ten free entry tickets to the Colour Computer Convention in Wexham-super-Marens November - see *Wordbox* for further details. Those winners who know that they can't make the show can opt to take their chances with the Editor's Magic Bottomless Box. A piece of pi.

Rules

When you have calculated the Great Unknown and scribbled back to the place you started from, put your conclusions, your feelings and the famous bottomless into an envelope marked SEPTEMBER COMPLETION and send it to us.

As for the bottomless, perhaps you

should all devise a mnemonic for pi in no less than seven lines of rhyme, including at least one ancient Greek... but no, I will spare you. Mr Orr did some time ago, so poetry can't have been good for him. Instead, think of yet another way of misspelling a common word (such as 'maler' or 'entire') to help you remember something. Now, just what's your word? We're judging this month!

June winners

Lots of entries to this competition, with a high proportion of right answers. Few people broke the coded message, though - see across the way for that. The 1919 prize was:

C. Hutchinson of Middleborough, 0 J Gray of Middleborough, J D Harley of Chatham, 0 R Olin of Mansfield, T in Denton of South Norwood, Ronald D

Waters of Walsal, R M Cashmore of Market Harborough, Austin Hancock of Bromsgrove, John S Hatch of Weybridge and J J Taylor of Middleborough. All these will receive copies of *Five Games Apart* from *Puzzle Software* who, incidentally, have some good new games on the market.

We had some excellent, practical suggestions for promoting the Dragon, including car stickers, local contact points and bounty for readers introducing new subscribers. The most ambitious one was Austin Henderson's: 'Get someone to hook into the national newspaper computers and create an automatic full page ad without anyone reading.'!

Solution

See opposite.

'Sylacian' referred to in this theme was the Greek mathematician and geometer, Archimedes, who was one of the earliest to attempt to calculate the value of π . The method that he used involved the calculation of the perimeter of regular polygons both inscribed and circumscribed about a circle of diameter 1 unit. In figure one the length of each side of the inscribed triangle can be easily calculated using an extension of Pythagoras' theorem. As the circle has a diameter of 1 unit, its circumference will have the value π , and consequently the perimeter of the triangle will give a (very) rough approximation to this value. By doubling the sides of the polygon, each successive calculation in the series will give a closer and closer approximation to the required value. If a similar series of calculations is performed but using circumscribed polygons, then the true value of π will lie somewhere between each pair of values. The problem of using such a method leads in the calculation of a series of square roots, each successive doubling of the number of sides in the polygon involves a more intricate and lengthy root to be evaluated. The table (figure two) shows the results of such an operation on polygons with 3 to 104 sides in the doubling series of 3 to 104. Archimedes calculated as far as a 96-sided polygon, but in the table the values have been extended a little further.

From his calculations, Archimedes was the first to give the approximate value of 22/7 for π , a figure that is still used today when only a rough computation is required. Three thousand years before Archimedes the Babylonians were using three-and-one-eighth in their calculations,

while in Egypt c. 1800 BC, the area of a circle was calculated as being the square of 8/9ths of its diameter. Chong Hong (713-720) believed π to be equal to the square root of 10, while Aryabhata (476-550) gives it the remarkably accurate 3.1416. At about the same time, the Chinese engineer Tsu Ch'ung Chi devised the amazing fraction 355/113. This produced an accuracy of π to six decimal places, accurate enough to compute the circumference of the earth, given its radius, to within eleven feet!

More recently, the Indiana State Legislature considered a bill in 1897 to regard π as having a value of 3.2 exactly. The bill was defeated. On a more practical note, mathematicians have frequently devised rational approximations for π , but few have been able to exceed the Tsu Ch'ung Chi fraction for accuracy, and his value is probably the most useful for everyday calculations. In figure three, the table

shows some of these approximations, the accuracy of each has been tested by using each value to compute the circumference of the earth. The difference from the true value is shown in the right hand column. The final value in the table remains blank as this forms the basis of the month's competition. In 1914, the Indian mathematician Srinivasa Ramanujan devised a rational approximation which gives π to an even greater accuracy. Using the test already described, this approximation will calculate the circumference of the earth to within one inch (assume that the earth has a radius of 3960 miles, and therefore a circumference of 2 π or 24900). The approximation that Ramanujan found is given as the square root of the square root of the value indicated in the brackets (7). This unknown, which is what you have to find, is a fraction with a whole number for both the numerator and the denominator. What are the simplest numbers which will do it?

Approximation	Decimal value	Accuracy
Biblical	3	-121 miles
John Lambert	(79)	-626 miles
Indiana State Legislature	3.2	+483 miles
Chong Hong	$\sqrt{10}$	+184 miles
Egyptian	area = (8/9) ²	+160 miles
Babylonian	3 1/8	-23 miles
John Lambert	(83/26)	-25 miles
Archimedes	22/7	+10 miles
Aryabhata	3.1416	+307 feet
Tsu Ch'ung Chi	355/113	+11 feet
Srinivasa Ramanujan	(7)	<1 inch

The Answer

This is Gordon Lee's own solution to the June competition see page 28 for results.

Puzzle one

ANSWER: the smallest number which 'halves' you is a maximum in excess of one million is 1075. This starting value reaches a maximum of 1275825, the whole sequence taking 51 steps to reduce to 1.

Listing one runs the test on small numbers from 1 upwards, each time computing the path length (PL) and the maximum value reached (M). As each run is completed the results are printed out. This is continued until the maximum printed at line 180 exceeds one million.

In the program, note that it is only necessary to test for a new maximum after an odd number has required the value to be multiplied (lines 150 and 160,

Puzzle two

ANSWER: the quotation was 'The only competition worthy a wise man is with himself' (Mrs Anna Jameson, 1794-1860). The code used was a substitution code using a 'key' to derive the substitution required for each letter. Clearly, the phrase given was unlikely to have been in a straight substitution code as, in this case, the three-letter sequence EEF would indicate a word of three letters, the first two being the same. As this is unlikely, the use of a key is indicated.

This key is in fact the words 'Dragon User', used repeatedly throughout the message. Each letter in the quotation was advanced by the number of letters in

dictated by its corresponding 'key' letter (D = 4 as D is the fourth letter of the alphabet).

THE ONLY COMPETITION WORTHY A WISE MAN IS WITH HIMSELF
DRR GDRU SERDRRGRHUS DRDRRG
DRHUSE DRH GR GRHUS DRDRRGO
RZF RZFZ "VTYTRHGRU SGRVLF" P
RDLU DEET JZ LWRU MDRRFRU

So, T plus D (4) will give X, and so on. To decipher it (provided that you know the method to use), the process is reversed. This is done using **Listing two**, which uses the ASCII values of the letters as a basis for the substitution. Line 158 ensures that all 'non-letters' (spaces, punctuation marks, etc.) are left unchanged.

Listing 1

```

100 PRINT 1
110 N=START
120 P=1:PL=0
130 IF N=1 THEN GOTO 180
140 IF N=2 THEN P=2:PL=1
150 IF N=3 THEN P=3:PL=2
160 IF N=4 THEN P=4:PL=3
170 IF N=5 THEN P=5:PL=4
180 PRINT 315825; "  " PL; "  " PL
190 IF P=1000000 THEN GOTO 210
200 GOTO 130
210 PRINT 315825; "  " PL; "  " PL

```

Listing 2

```

100 DIM "DRAGONUSER"
110 PR="T Z P" SC="VTYTRHGRU SGRVLF"
120 DEF DEF JJ LMR MDRRFRU "
130 Z=" " " " "
140 FOR P=1 TO LEN(PR)
150 A=ASC(DEF(P))-P:GOTO 160
160 IF A<0 THEN A=A+26:GOTO 160
170 A=A+ASC(DEF(P))-P:GOTO 160
180 IF A<0 THEN A=A+26:GOTO 180
190 PR=PR+ASC(DEF(P))-P:GOTO 160
200 IF A<0 THEN A=A+26:GOTO 180
210 PR=PR+DEF(P)
220 NEXT P
230 PRINT PR;PR;PR

```

Dragon Answers

If you've got a technical question write to Brian Cudge. Please do not send a BAE as Brian cannot guarantee to answer individual inquiries.

Double your notes

Have a Dragon II and Microsoft's Composer program. Do you want the easy way of using the II's 128K memory to be able to produce longer multipages, all on finding the 720 note maximum more and more restricting?

John Blackburn
65 Ince Green Lane
Ince-in-Makerfield
Wigan
Lancs M92 2JW

The first five lines of the Composer Basic program set where the music program and data are stored and the maximum number of characters. By default, the music collection address is \$8000, and the compiled music immediately after this at \$8000 which gives you for 720 notes (the end of memory being set to \$FFFF).

Operating in 64K mode allows an extra 128K of music, but remember that the music is stored on 2474 statements at the end of the program so it will be necessary to move the machine code and compiled music up in memory (this is easy as the code is relocatable, built-in on a 256K system). Adjusting the DLI limit allows us to reflect this will allow the extra 2474 statements to fit.

By experimenting with different settings, you should find that you can get about twice as many notes in memory with the extra 128K.

Sort it out

Have written a sort with Basic, part of which has to sort out about 400 short strings into alphabetical order having loaded them from tape. I am using the 'bubble sort' technique for simplicity. The program works fine for a while, then for no apparent reason it 'hangs up' and the BASIC keypad no longer responds. After pressing RESET and examining the parity controller, some of the characters turn into meaningless strings of zeros!

Can you explain what is happening, is this bug just too much for my Dragon 32?

John Smallwood
51 Kings Drive
Fulwood
Preston
Lancs PR2 5AQ



When working with large number of individual strings (in your case 400) the Dragon has to occasionally do a 'garbage collection' of string space. This occurs because swapping the values of one string does not move the strings of characters themselves, just the pointers to them in string space. Thus with strings of different lengths small segments of unused space build up the string space becomes fragmented.

The more string swapping there is, the more fragmented the string memory space becomes. As the number of characters in each string increases, the memory soon becomes too fragmented to use.

The 'parser' input program in the Dragon re-organises its string space, moving strings around until these small fragments disappear leaving more space. Pressing RESET in the middle of this will leave some string variables pointing at the wrong addresses and hence meaningless data.

This answer neither is elegant or is as efficient as the algorithm than the bubble sort.

Inside-out

ABOUT two months ago I wrote a simple program to calculate the missing side of a triangle when given the hypotenuse and the other side. However, when I used the program's work table, sometimes it gave an FC error (line 60) which was:

```
600=160R/YP-Y*P-60)G
```

Although sometimes the program works OK, I was wondering if you could identify this happening as I am very confused.

Michael McCullagh
729 Crayke Road
Dorset DT9 6LA

THE BASIC interpreter function will give an FC error if its parameter is a

negative number or is not possible to find the square root of any other positive number. In your program, this only happens if the value of AB is greater than that of Y*Y, which it should never be as the hypotenuse of a triangle is, by definition, the longest side.

Add a line to check that the values entered are valid before calculating the third side, such as:

```
55 IF AB>YP THEN PRINT  
"NOT VALID BE LONGER"  
GOTO 600
```

Dumb ascii

I would like to use my Dragon II computer as dumb ascii terminal, communicating through the RS-232 serial port with the machine. The manual only mentions the use of DUDAD and DLADL for downloading Basic and machine code programs to the Dragon. I would be very grateful if you could kindly give the information needed to write a terminal program.

F. Mandel
P.O. Box 681238
Baltimore MD 10
South Africa

This information regarding the serial port has been printed here before, but contains only one of a number of letters regarding this information from the above 'Additional Information' booklet. It'll give it again, together with machine code versions for assembler programmers...

Get Read Rates

```
POKE 40967,(PEEK(40967)+AND(HP#) OR B)
```

Where B is from 1 to 15 representing the rates: 50, 75, 110, 135, 150, 200, 400, 1200, 1600, 2400, 3600, 4800, 7200, 9600.

Send a character

```
10 IF PEEK(40965)+AND(4=0) THEN 10  
20 POKE 40964,C#
```

Wait for a character

```
10 IF PEEK(40965)+AND(0=0) THEN 10  
20 C1=PEEK(40964)
```

```
8070 LDA 0FF07  
8071 SBA 4FFF  
8072 ORA 7A0D  
8073 STA 0FF07  
8074 RTS
```

```
8000 LDA 0FF05  
8001 SBA 414  
8002 BEQ 805D  
8003 LDA 7C4  
8004 STA 0FF04  
8005 RTS
```

```
8010 LDA 0FF05  
8011 SBA 408  
8012 BEQ 801F  
8013 LDA 0FF04  
8014 RTS
```